

## R E M A R K S

Careful review and examination of the subject application are noted and appreciated.

## SUPPORT FOR CLAIM AMENDMENTS

Support for the amendments to the claims can be found in the drawings as originally filed, for example, on FIGS. 1-4 and in the specification as originally filed, for example, on page 12, line 4 through page 13, line 6, on page 9, lines 5-8, on page 10, lines 4-17 and on page 16, lines 1-18. As such, no new matter has been added.

## CLAIM OBJECTIONS

The objection to claims 1 and 15 has been obviated by appropriate amendment and should be withdrawn.

## CLAIM REJECTIONS UNDER 35 U.S.C. §103

The rejection of claims 1-3, 5-12, 15, 16, 18 and 19 under 35 U.S.C. §103(a) as being unpatentable over Aab (U.S. Patent No. 6,357,012) in view of Philips Semiconductors, "74HC/HCT5555 Programmable delay timer with oscillator", September 1993 ("Philips") has been obviated by appropriate amendment and should be withdrawn.

The rejection of claims 4, 13, 17 and 22 under 35 U.S.C. §103(a) as being unpatentable over Aab and Philips, and further in view of Borras (U.S. Patent No. 5,128,938) has been obviated by appropriate amendment and should be withdrawn.

The rejection of claims 14, 21 and 25 under 35 U.S.C. §103(a) as being unpatentable over Aab and Philips in view of Horowitz & Hill, The Art of Electronics, Cambridge University Press, Second Edition, ("Horowitz") has been obviated by appropriate amendment and should be withdrawn.

The rejection of claims 20, 23 and 24 under 35 U.S.C. §103(a) as being unpatentable over Aab and Philips in further view of Lee et al. (U.S. Patent No. 6,025,745; hereafter Lee) has been obviated by appropriate amendment and should be withdrawn.

In contrast to the cited references, the present invention (claim 1) provides a microcontroller configured to determine the programmable delay value during an awake mode by (a) initially setting the programmable delay value to a predetermined delay value, (b) starting the timer circuit, (c) measuring a delay time between enabling the timer circuit and assertion of the wake-up signal and (d) adjusting the programmable delay value based on the measured delay time. Claims 14 and 15 recite similar limitations. The cited references are silent regarding a microcontroller configured as presently claimed. Therefore, the cited references, alone or in combination, do not teach or suggest

each and every element of the presently claimed invention. As such, the presently claimed invention is fully patentable over the cited references and the rejections should be withdrawn.

Furthermore, with respect to claim 1, the portion of Aab cited in the Office Action states:

This takes place after a specific elapsed time span, which is determined during the active phase of microcontroller core 11, and set via line 25 in a register in time-switch logic 16 (column 3, lines 13-16 of Aab, emphasis added).

The cited passage of Aab merely states that the elapsed time span is determined during the active phase of the microcontroller, Aab is silent regarding the microcontroller determining the elapsed time span as presently claimed. Aab further states that:

. . . the time-switch logic arrangement determines the predetermined time period (column 6, lines 35-36 of Aab).

Thus, Aab does not appear to teach or suggest a microcontroller configured to determine the programmable delay value during an awake mode by (a) initially setting the programmable delay value to a predetermined delay value, (b) starting the timer circuit, (c) measuring a delay time between enabling the timer circuit and assertion of the wake-up signal and (d) adjusting the programmable delay value based on the measured delay time, as presently claimed.

Philips does not cure the deficiencies of Aab. Specifically, Philips is also silent regarding a microcontroller configured as presently claimed. Furthermore, the conclusory

statement on page 3, lines 9-10 of the Office Action that "A motivation for [combining Aab and Philips] would have been to ensure the integrity of the timer circuit" fails to make required specific findings of why one of ordinary skill in the art, with no knowledge of the presently claimed invention, would select the cited references for combination as in the claims. Therefore, the Office Action fails to meet the Office's burden of factually establishing a prima facie case of obviousness (MPEP §2143). As such the presently pending claims 14, 21 and 25 are fully patentable over the cited references and the rejection should be withdrawn.

With respect to claims 4, 13, 17 and 22 , the cited portion of Borras states:

To enter the energy saving mode, the microcontroller [sic] 206 program (via line 236) a timer 202 for a time interval related to a code received from the central 102. As previously mentioned, this code is based upon the central's prediction of a future time interval during which there is low probability of the subscriber unit transmitting or receiving a message. Preferably, a portion of the code contains information that may be decoded to determine the time interval that the subscriber unit is to remain in the energy saving mode. Alternately, the code may identify a particular one of several time intervals stored within the microcontroller 206 or in "off-chip" memory. In any event, the microcontroller temporarily suspends power from non-essential circuits by opening (210) the power switch 208. Lastly, the microcontroller also commands (238) the clock source 204 to provide a reduced rate clock

signal 240, to further conserve energy (column 4, line 66-column 5, line 15 of Borras).

The portion of Borras cited by the Office Action appears silent regarding generating an input signal in response to a value stored in a register of the microcontroller or determining a programmable delay value in response to one or more firmware instructions, as presently claimed. The conclusory statement that "A motivation for [combining Aab, Philips and Borras] would have been to ensure the integrity of microcontroller operation" fails to make required specific findings of why one of ordinary skill in the art, with no knowledge of the presently claimed invention, would select the cited references for combination. Furthermore, the Office Action fails to provide any evidence or convincing line of reasoning how Borras would ensure the integrity of microcontroller operation. Therefore, the Office Action fails to meet the Office's burden of factually establishing a prima facie case of obviousness (MPEP §2143). As such the presently pending claims 4, 13, 17 and 22 are fully patentable over the cited references and the rejection should be withdrawn.

With respect to claim 21, the Office Action admits that Aab and Philips are silent regarding implementing a microcontroller and a timer on a single integrated circuit, as presently claimed (see page 5, lines 17-18 of the Office Action). Horowitz does not cure the deficiencies of Aab and Philips.

Specifically, the portion of Horowitz cited by the Examiner states:

A more important distinction separates microcomputers from *microcontrollers*, a term used to describe the use of a microprocessor, **along with** a small amount of memory and **other support chips**, for dedicated control of a process or instrument. In this role a microprocessor **plus a few assorted chips** and some ROM (read-only memory) can flexibly replace a complicated logic circuit of gates, flip-flops, and analog/digital conversion functions and should be considered whenever embarking a large design project. There are microprocessors optimized for this kind of application, generally characterized by on-chip timers, ports, and other functions **that usually require extra ICs**, at the expense of the computational power and large address space that characterizes microprocessors intended for microcomputer-based computational tasks (last 7 lines in column 2 on page 673 through lines 1-14 of column 1 on page 674 of Horowitz, emphasis added).

Nowhere in the cited paragraph does Horowitz expressly recite that it is common to implement **a timer circuit configured to present any of a plurality of divided delay signals as a wake-up signal in response to an input signal and an enable signal**, as presently claimed, with the microcontroller on a single integrated circuit. Rather, Horowitz at best merely indicates the possibility that microcontrollers can have on-chip timers at a performance cost.

Furthermore, Horowitz is silent regarding the microcontroller being configured to determine the programmable delay value during an awake mode by (a) initially setting the programmable delay value to a predetermined delay value, (b)

starting the timer circuit, (c) measuring a delay time between enabling the timer circuit and assertion of the wake-up signal and (d) adjusting the programmable delay value based on the measured delay time, as presently claimed. Therefore, the Office Action fails to meet the Office's burden of factually establishing a prima facie case of obviousness (MPEP §2143). As such the presently pending claims 14, 21 and 25 are fully patentable over the cited references and the rejection should be withdrawn.

With respect to claims 20, 23 and 24, Lee is directed to an auto-calibrating digital delay circuit for use in a SCSI bus connecting a computer with a peripheral device (FIG. 1, Title and column 3, lines 16-30 of Lee). The conclusory statement that "At the time of the invention, it would have been obvious to one of ordinary skill in the art to [add?] Lee's calibrating to [Aab/Philips?] method in order to adjust delay to account for variations such as those due to environment and manufacture" fails to make required specific factual findings of why one of ordinary skill in the art, with no knowledge of the presently claimed invention, would select a reference concerned with a delay circuit for use in a SCSI bus for combination with Aab and Philips. Therefore, the Office Action fails to meet the Office's burden of factually establishing a prima facie case of obviousness (MPEP §2143). As such the presently pending claims 20, 23 and 24 are

fully patentable over the cited references and the rejection should be withdrawn.

Claims 2-13 and 16-25 depend, directly or indirectly, from either claim 1, claim 14 or claim 15 which are believed to be allowable. As such the presently claimed invention is fully patentable over the cited references and the rejections should be withdrawn.

Accordingly, the present application is in condition for allowance. Early and favorable action by the Examiner is respectfully solicited.

The Examiner is respectfully invited to call the Applicants' representative should it be deemed beneficial to further advance prosecution of the application.

If any additional fees are due, please charge our office Account No. 50-0541.

Respectfully submitted,

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